

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Spinless Fermionic ladders in a magnetic field SAM CARR, BORIS NAROZHNY, ALEXANDER NERSESYAN, The Abdus Salam ICTP, Trieste, Italy
— We study a system of interacting spinless fermions hopping on a two-leg ladder subject to an external magnetic field perpendicular to the ladder. At $1/2$ -filling, we find a series of quantum phase transitions as a function of the magnetic field: these are either $U(1)$ Gaussian phase transitions between two phases with distinct types of long-range order or Berezinskii-Kosterlitz-Thouless transitions between ordered and gapless phases. At $1/4$ -filling, we also find long-range order: a bond density wave or a staggered flux phase, each supporting excitations with fractional charge.

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Date submitted: 16 Jan 2006

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